SUSTAINABLE GARDENING PRACTICES AMONG URBAN HOUSEHOLDS

ST. TERESA'S COLLEGE
(AUTONOMOUS)
ESTD 1925

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(Autonomous)

Project Submitted to

MAHATMA GANDHI UNIVERSITY

In partial fulfillment of the requirement

for the award of the degree of

BACHELOR OF SCIENCE

IN

HOME SCIENCE

KHADEEJA NASSER

Reg. No. AB21HSC005

DEPT. OF HOME SCIENCE

MARCH 2024

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18/3/24

DR. GARIMA GUPTA

Examiner

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Project Guide

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Date and Seal

DEPARTMENT OF HOME SCIENCE
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Chapter 1
INTRODUCTION

As urbanization continues to grow worldwide, the importance of sustainable practices within cities becomes increasingly evident. One such practice gaining momentum is sustainable gardening in urban environments. Sustainable gardening not only enhances the aesthetic appeal of cities but also promotes environmental health, food security, and community well-being. This essay explores the concept of sustainable gardening in urban settings, its benefits, and key strategies for its successful implementation.

Sustainable gardening in urban environments refers to the cultivation of plants, including flowers, vegetables, and trees, using eco-friendly and resource-efficient methods within city limits. It encompasses a holistic approach to gardening that aims to reduce negative environmental impacts while maximizing benefits for urban communities.

All over the world urbanization is on the rise and cities are expanding at an unprecedented rate. As concrete jungles grow, green spaces and natural ecosystems are often sacrificed. In the modern world, there is a growing need for the importance of integrating sustainable gardening practices into urban environments. Sustainable gardening not only enhances the aesthetic appeal of cities but also plays a crucial role in mitigating environmental challenges and improving the overall quality of urban life. The study explores the pressing need for adopting sustainable gardening practices in urban settings.

Urban environments are always having poor air quality due to pollution from vehicles and industrial activities. Sustainable gardening practices, such as planting trees and shrubs, can act as natural air filters. These green spaces absorb pollutants, release oxygen, and help in mitigating the harmful effects of air pollution, both indoor and outdoor resulting in cleaner and healthier urban air.

Another reason for embracing sustainable gardening in urban areas is the preservation of biodiversity. Urbanization often leads to destruction of habitat of birds and animals, which threatens local flora and fauna. By incorporating native plants and creating gardens, and reducing the use of harmful chemicals, urban dwellers can contribute to preserving and enhancing local biodiversity.

As global warming increases people experience significantly higher temperatures in outdoor and indoor which results in purchase and use of air conditioners which has a negative impact of environment by producing CFC. Sustainable gardens with ample vegetation can provide shade and cool the environment This cooling effect not only enhances comfort but also lowers energy consumption for air conditioning.

Green spaces in urban areas serve as essential hubs for community engagement and well-being. Sustainable gardens provide a place for people to connect with nature, reducing stress and improving mental health. These spaces offer opportunities for community gardening, education, and recreational activities, fostering a sense of belonging and social cohesion.

Sustainable gardening in urban environments is a great way to connect with nature and promote greener environment. It's all about finding creative ways to grow plants while minimizing our impact on the environment. It's like bringing a little piece of nature into the concrete jungle! By using techniques like composting, rainwater harvesting, and choosing native plants, we can create beautiful and eco-friendly green spaces right in our own backyards or even on balconies.

It is not only beneficial for the planet, but it also allows us to reconnect with nature in the midst of city life. One great practice is composting, where we can turn food scraps and yard waste into nutrient-rich soil for our plants. Another idea is to collect rainwater to water our gardens, reducing our reliance on treated water. And let's not forget about choosing native plants that are well-suited to our local climate and require less maintenance.

Sustainable gardening has been gaining popularity in recent years. According to various studies, sustainable gardening practices can reduce water usage by up to 50% and decrease pesticide and fertilizer use. Additionally, urban gardens have been shown to increase food security and provide communities with fresh, locally grown produce.

Urban agriculture is regarded as an emerging tool and strategy for sustainable urban development as it addresses a wide array of environmental, economic and social objectives. Home gardening represents a common form of UA in the close living environments of urban dwellers that can be particularly important for rapidly growing cities and metropolitan regions in developing and transitional countries. However, a structured conceptual analysis of different urban sustainability benefits, including its operationalisation, is lacking. We therefore investigated whether and to which extent home gardening practices in urban residential environments contribute to urban sustainability. In detail, we analysed the contribution of prevailing cultivation practices, socio-economic situations, motivation, knowledge and networking of individual household and external framework conditions to the environmental, economic and socio-cultural dimensions of urban sustainability. Between January and May 2014, we conducted a questionnaire survey among 111 gardeners in residential neighbourhoods of Pune (India) and applied an analytical framework using composite indicators with index values to the compiled data. Our main results showed that sustainability benefits can be expected especially in environmental and socio-cultural aspects, particularly for urban biodiversity conservation and aesthetic green urban spaces, and less expected in economic contributions and food production. Gardening practice and sustainability contribution is rather determined by the motivation and socio-demographic factors of the gardener than type and size of the garden. We conclude that conserving and building home gardens can contribute to urban sustainability and should therefore be considered in the planning, design and management of urban spaces.

The role of landscape and gardening play in urban settings from a socio-cultural, and ecological dimension. The practice of cultivating in gardens, parks and vacant lots, creates community spaces, and are increasingly becoming important to peoples' experience of social and cultural wellbeing. In recent times, this has become a major focus of research in ecology, agriculture, urban design, landscape architecture, human geography, and sociology. Community gardening is one of the avenues toward revitalizing urban environments, and it provides a way of addressing multi-faceted urban problems ranging from limited food access to safety and community cohesion. That being said, it is necessary to continually evaluate the roles which society, ecology, and culture play in cities and landscape planning due to the dynamic nature of culture.

Urban densification and central urban areas' lack of open spaces, new forms of small-scale urban gardening practices have emerged. These gardening practices respond to urban pressures and open new modes of green space governance, presenting alternative and multifunctional ways to manage and revitalise cities. Focusing on the case of Geneva, the article unfolds two levels of discussion. On the one hand—and with reference to the theorist Habermas—it examines how multiple actors with different interests interplay and cooperate with each other in order to negotiate over open space, while discussing implications for local politics and planning. On the other hand, it describes how these negotiations result in new, innovative, and hybrid forms of public green space.

Some of the benefits of sustainable gardening are: Biodiversity: Sustainable gardens provide habitats for native species, increasing urban biodiversity. Reduced Pollution: By using organic practices and limiting chemical use, sustainable gardening reduces soil and water pollution. Carbon Sequestration: Urban green spaces help sequester carbon dioxide, mitigating the urban heat island effect. Food Security- Local Food Production: Urban gardens contribute to local food production, reducing the carbon footprint of imported produce. Access to Fresh Produce:

Residents can access fresh, healthy produce, promoting food security in underserved communities.

Community Well-Being- Social Cohesion: Gardening fosters community bonds and provides spaces for social interaction. Mental Health: Gardening has therapeutic benefits, reducing stress and promoting mental well-being. Educational Opportunities: Urban gardens serve as outdoor classrooms, teaching valuable lessons about ecology and sustainability.

Sustainable gardening does come with its fair share of challenges . Some difficulties faced are limited space in urban areas, lack of access to sunlight, and soil quality issues. Vertical gardening, using containers, and creating raised beds to maximize space can help to solbe this issue. The use of grow lights to supplement sunlight and improve soil quality through composting and soil amendments can help the issue of lighting.

One drawback of urban gardens is limited space, which can restrict the size and variety of plants you can grow. Another challenge is pollution, which can affect air and soil quality. However, with proper planning and care, these issues can be minimized.

Gardening brings in a host of benefits. It helps improve air quality by reducing pollution and increasing oxygen production. Urban gardens also create green spaces that can cool down cities, reducing the urban heat island effect. Plus, they provide habitats for pollinators like bees and butterflies, promoting biodiversity. And the joy of growing our own fresh produce, promoting food security and reducing our carbon footprint and being self sufficient are many reasons to embrace sustainable gardening in urban environments

It represents a multifaceted approach to improving cities' livability, resilience, and environmental stewardship. Its benefits extend beyond beautification, encompassing environmental protection, food security, and community well-being. By implementing strategies that prioritize soil health, water efficiency, native plant

selection, and community engagement, cities can foster sustainable gardening practices that contribute to a more harmonious and sustainable urban future.

Relevance of the Study

In rapidly urbanizing modern world, there is a growing need for sustainable gardening practices that not only beautify urban spaces but also contribute to environmental conservation and community well-being. This project aims to explore various aspects of sustainable gardening in urban environments. It helps promote environmental conservation, reduces water usage, and decreases reliance on harmful pesticides and fertilizers. By growing your own food and creating green spaces in urban areas, sustainable gardening improves food security, enhances air quality, and fosters a sense of community. Plus, it's a fun and rewarding way to connect with nature and contribute to a healthier planet.

Objectives of the study

- To find out the types of garden adopted in urban households
- To find out landscaping adopted outdoor and indoor
- To identify outdoor and indoor plants in gardens
- To study benefits and challenges of indoor gardening

Chapter 2
REVIEW OF LITERATURE

A home garden is a space, usually in your backyard or even indoors, where you can grow plants. It can be a small area with a few pots or a larger space with different types of gardens like vegetable, flower, or herb gardens. Home gardens allow you to grow your own food, enjoy beautiful flowers, or cultivate herbs for cooking. It's a way to connect with nature and create a green oasis right at home . Home gardening is a relaxing and rewarding hobby for many. Sustainable gardening combines organic gardening practices with resource conservation. Generally, sustainable gardening: is forward-thinking. values ecosystem support. makes as little negative impact on the earth as possible. Each individual does gardening in different ways and in their own style. A literature review is an overview of the previously published works on a specific topic. The review of literature pertaining to the study titled **"Sustainable gardening in urban households"** is discussed under the following headings.

2.1 Significance of home gardening

2. 2 Types and layouts of gardens

2.3 Tools and techniques in garden

2.1 Significance of home gardening

Home gardening is the activity which is relaxing and a good source of physical activity. It has various mental and physical health benefits along with its significance in improving our environment.

2.1.1 Benefits of gardening for our environment

In an era where climate change and environmental degradation are pressing concerns, gardening offers a tangible way for individuals to make a positive impact. Gardening helps us increase the amount of oxygen and it purifies the air.

By cultivating a garden, we contribute to biodiversity and are a natural habitat for many animals like birds, squirrels, insects like bees and butterflies which are great pollinators and benefit the environment.

Moreover, growing our own food reduces our reliance on mass-produced, resource-intensive agriculture and we can grow organic fruits and vegetables without chemical fertilizers and pesticides which is better for our health.

It promotes sustainable practices such as composting, water conservation, and organic gardening techniques, reducing our carbon footprint and fostering a healthier planet for future generations.

2.1.1 Importance of gardening for physical health

Gardening is a physical activity and there is a range of garden tasks that uses the upper and lower body such as digging, turning compost or raking . They offer moderate intensity physical activity, whilst other tasks that use primarily the upper body in standing or Squatting postures offer low intensity physical activity. Garden tasks such as hand weeding, mixing the soil, filling containers with soil and transplanting seedlings and others are a form of physical activity and helps to keep the body heathy and fit.

2.1.3 Importance of garden in mental health and wellbeing

Gardens as well as the activity of gardening, have been shown to have a positive impact on peoples' health and wellbeing, the result of both the physical activity and the use of the garden as a space for mental relaxation and stimulation. Gardening provides an outlet for fear and worry associated with health concerns. It's not uncommon for people to plant new shrubs or flowers when they receive negative information . It is also a stress busting activity .

Besides the activity of gardening, viewing green space and being in green space has also been shown to have positive effects on mental health and stress. 'Green space' in the form of plants at work can also improve performance and mood. According to Pretty et al. (2007) "less green nature means reduced mental wellbeing,

or at least less opportunity to recover from mental stress". Also the greenery of a neighborhood was positively correlated with mental health along with physical activity and social cohesiveness.

Flowers are a powerful positive emotion inducer and have immediate and long-term effects on emotional reactions, mood, social behavior and even memory . It also immediately brightenes the environment and improves the aesthetics. Studies have found evidence that being in green, or even being able to look out on a green landscape, is linked with better recovery from surgery, less anxiety and depression, better stress management, and many other positive effects.

2.2 Types and layouts of gardens

Home gardens are of many times, different people use various types and layout of gardens according to their aesthetics, purpose, space they have, type of gardens and so on.

2.2.1 Garden designs and layouts in home gardening

Garden is a place filled with plants of valuable and pleasurable nature. In view of rising urbanization, limited availability of ground space in house compound and increasing environmental pollution, garden has received priority especially in city sphere in planning of buildings, roads and public places.Landscape gardening has been an indispensable part of architectural design.

In landscape gardening, emphasis given on improvement of land side using suitable gardening techniques and plants. The gardens are laid out using one of following designs.

1. Formal design

This design is very stiff and every thing is done in a straight and narrow way in symmetrical or a geometrical pattern, every thing is planted in straggly lines. The hedges, edges and topiary are maintained in proper shape by regular training and pruning. Symmetry is always maintained in the garden by undertaking similar type of plantation and using similar garden technique and feature on one side of the garden, the same thing should albs be repeated on the other side of the garden.

2 Informal design:

In this design, the plants and features of the garden are arranged naturally without following any hard and fast rules. The plant is first laid on the ground and then it is brought on paper. The existing plant on the ground is utilized as such for the purpose of beautification.

3. Picturesque design:

The idea of picturesque design of garden was expounded by William Robinson in the last decade of nineteenth century. This idea was to naturalize plants in shrubbery. He also suggested that grass should not be mown and bulbous plants should be grown scattered in the grass to imitate wild scenery. Trees, shrubs and bulbous plants should be planted in forest flora to have an effect of wild garden, this idea was to allow the creeper to climb over the tree naturally to imitate forest type of effect

2.3 Tools and techniques in garden

There are various tools and techniques used in garden. Each individual have their own tools and technique to do each work. Tools and materials such as pots , soil , spade to move soil, irrigation tools, fertilizers, pesticides etc are some of the materials used in gardening

2.3.1 Techniques of irrigation

Essentially there are three different types of garden irrigation. One is watering by hand, another uses a sprinkler, and the last uses a garden watering system. Usually, watering by hand is carried out with a garden hose and a spray nozzle or using a watering can. A sprinkler is placed in the middle of the area to be irrigated and connected to the water source via a garden hose. A garden watering system involves creating a network of pipes that takes water around the garden and delivers it to the plants through drip irrigation, micro sprays, mini sprinklers, or pop up sprinklers.

Bucket and mug and other types of watering by hand is a traditional method of watering that everyone knows. It involves either using a watering can or a garden

hose. This method of irrigation can be practical and effective - if done right. We would always recommend using a spray nozzle with a trigger to minimize water wastage. If you were just to use a garden hose with an open end, you would waste so much water unnecessarily because the water just keeps pouring out of the end with no control. The benefit of watering by hand is you can judge whether or not a plant needs water, and how much. You can simply test by touching the soil, or using a moisture meter.

Garden irrigation systems such as drip irrigation and sprinklers are fast becoming the must have addition for gardeners. The benefit of having an automatic watering system is that it can take care of the watering for you, freeing up your time for leisure, or even taking care of the garden when you're off on holiday. If installed correctly, they can be much more efficient than watering by hand or using a garden sprinkler. There are many varieties to choose from, each having their own uses and benefits.

2.3.2 Use of fertilizer and pesticides

Fertilizers are substances that provide nutrients to plants. They are usually made from natural materials, like plant or animal products. However, there are some fertilizers that are man-made. Fertilizers can help crops grow easily and you can also use them in gardens or lawns for weed control.

Pesticides, on the other hand, are substances that kill unwanted pests. They often have a negative effect on non-targeted animals and they’re toxic to humans so they need to be used with caution. There are many different types of pesticides but they all work in similar ways—they poison the pest by entering the blood stream through eating or contact with skin.Fertilizers and pesticides can both be used to help with weed control and pest elimination. A fertilizer is a plant nutrient that is added to the soil to promote growth. A pesticide is a substance that kills or controls pests, usually insects.

Pesticides are most effective when used as a preventative measure, preventing the pest from ever reaching your plants. Fertilizers are most effective

when used as an after-treatment, adding nutrients to plants that have already been exposed to pests. Fertilizers are used to promote growth in plants by adding nutrition to the soil., with its use, the risk of environmental effects is minimal.Pesticides work by killing off harmful pests and weeds while leaving your crop unharmed. With pesticides, there are more risks associated with the environment because many of them carry a high toxicity rating. So it is important to choose fertilizers and pesticides that cause minimum harm to the food as well as the environment.

Chapter 3
METHODOLOGY

Gardening is a relaxing and rewarding activity. It provides various benefits such as food security, provides oxygen, improves mood and aesthetics. The methodology adopted for the study on "***Sustainable gardening practices among urban households*** " comprise of the following headings :-

3.1 SELECTION OF AREA

The area selected for study includes samples from various places in India specifically Kerala to study the various home gardening practices.

3.2 SELECTION OF METHOD

The method selected was the online survey method. According to the online survey method, the investigator can gather data from a large number of people within a short time.

3.3 SELECTION OF SAMPLE

Purposive sampling technique was adopted for the study. The sample size was hundred, from all age groups in India, who are maintaining garden at their home.

3.4 SELECTION OF TOOL

Since the study mainly focused on the gardening practices in urban households, online questionnaire was framed related to it. Online questionnaire used as the tool for study is given in ***Appendix 1***

3.5 COLLECTION OF DATA

The survey was conducted online with the help of an online questionnaire in Google form. Questions were made with multiple choices with an additional option to give their own answer. The form was circulated online among people who had home garden.

3.6 CONSOLIDATION AND ANALYSIS OF DATA

The data gathered from the selected sample were consolidated and presented in ***Chapter 4 : Result and Discussion with appropriate tables and diagrams.***

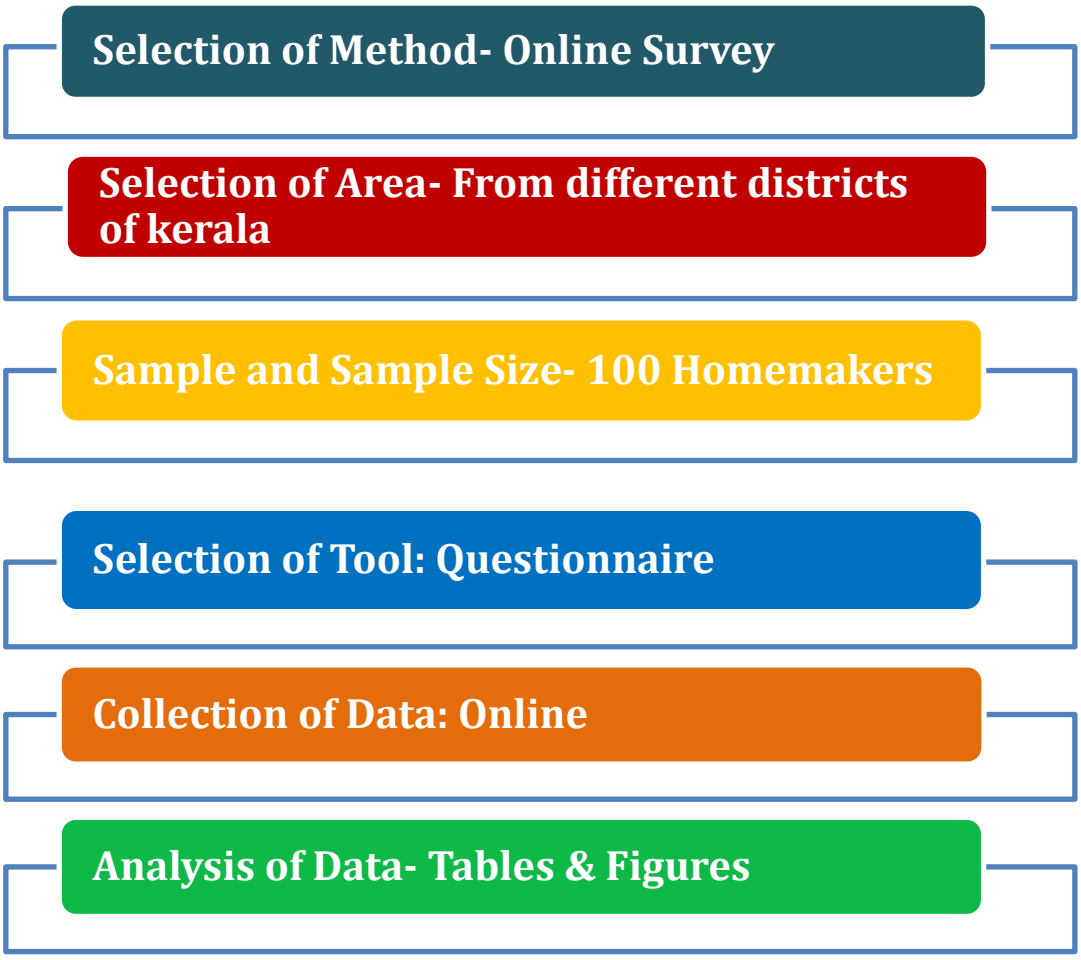

Figure 1

Research Design

Chapter 4

RESULTS AND DISCUSSION

The result of the study entitled "Sustainable gardening practices among urban households" which was conducted with the aim to understand the various types of gardens, the plants grown and other details related to home gardening is presented and discussed under the following headings:-

4.1 Background Information of the Sample

The background information pertaining to the selected sample consisted of age , number of family members, monthly income, area of residence etc. the data were consolidated and discussed in Table A.

Table 1

Background Information of the Sample

AGE	Below 30	30 to 40	41 to 50	Above 50
	80	6	5	9
EDUCATIONAL QUALIFICATION	Below graduation	Graduation	Post graduation/ professional	
	32	47	21	
NUMBER OF FAMILY MEMBERS	Less than 4	4 to 6	Above 6	
	17	74	9	
TOTAL FAMILY INCOME	Below Rs.10,000	Rs.10,000 to 30,0000	Rs.30,000 to 60,0000	Above Rs.60,0000
	11	21	20	48
TYPE OF RESIDENCE	Urban	Rural		
	74	26		
TYPE OF HOUSING	House	Flat	Shared housing	

	76	20	4	
AREA OF HOUSE IN sq.ft	Below 800 sq ft	801 to 1400	1400 to 2000	Above 2000 sq.ft
	12	35	25	28
TOTAL AREA OF LAND IN CENTS	Below 5 cents	5 to 10 cents	Above 10 cents	
	30	42	28	

4.1.1 AGE OF THE RESPONDENTS

The sample consists of 100 people of different age groups. Out of them 80% of them were below 30 years , 6% were between 30 to 40 years of age , 5% was between 41 to 50 years of age and 9% were above 50 years as shown in figure 2.

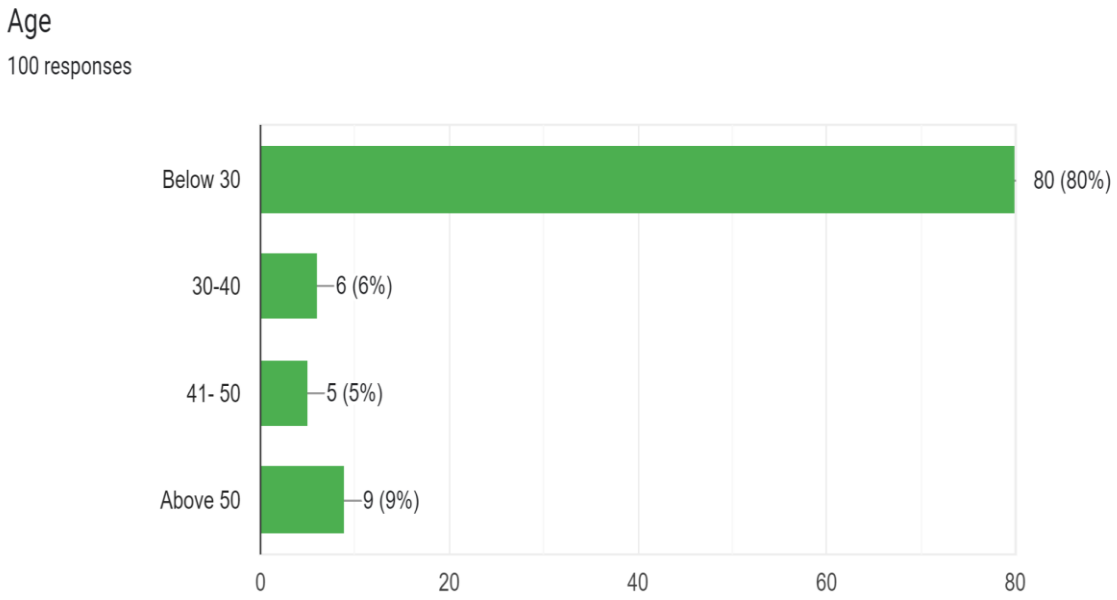

Figure 2

Age of respondents

4.1.2 EDUCATIONAL QUALIFICATION

The educational qualifications of the respondents were collected. Almost half of the respondents have completed their graduation. Out of the 100 respondents, 32% are below graduation, 47% have completed their graduation and 21% have done post graduation as shown in figure 3.

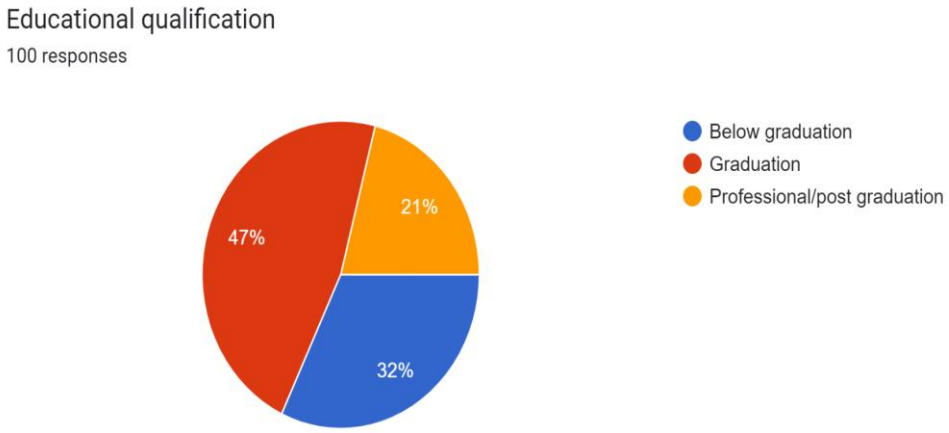

Figure 3

Number of family members

4.1.3 NUMBER OF FAMILY MEMBERS

From the following survey we can identify that the majority, 74% of the family have 4 to 6 members while 17% have less than 4 members and only 9% have more than 6 members as shown in figure 4.

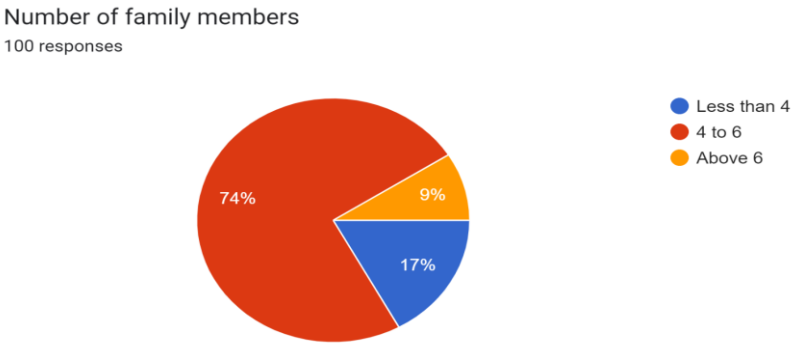

Figure 4

Number of family members

4.1.4 TOTAL FAMILY INCOME (MONTHLY)

From the given figure we can understand the monthly family income of the respondents. 11% of the family have income below Rs.10,000 , 21% between Rs.10,000 and Rs.30,0000 , 20% between Rs.30,000 and Rs.60,000 and 48% of the family have income above Rs.60,000

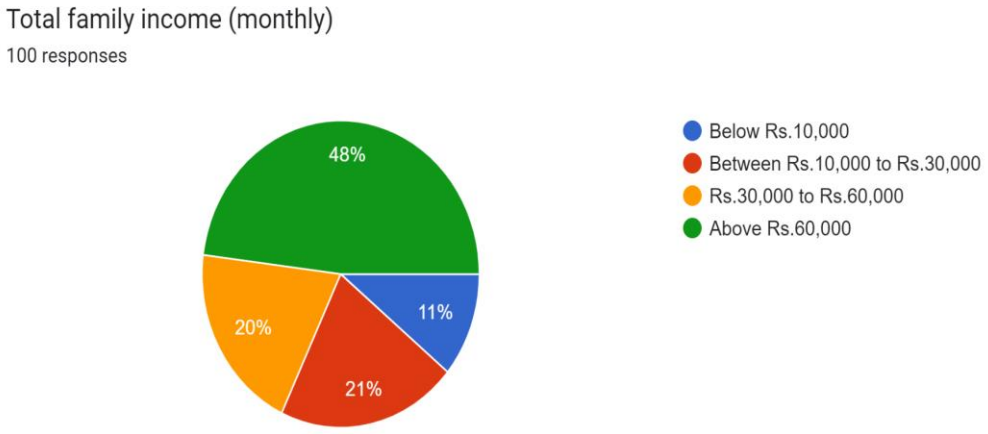

Figure 5

Total family income (monthly)

4.1.5 TYPE OF RESIDENCE

From figure 6 we can identify that the majority of them live in urban areas. 74% of them live in urban areas and 26% live in rural areas.

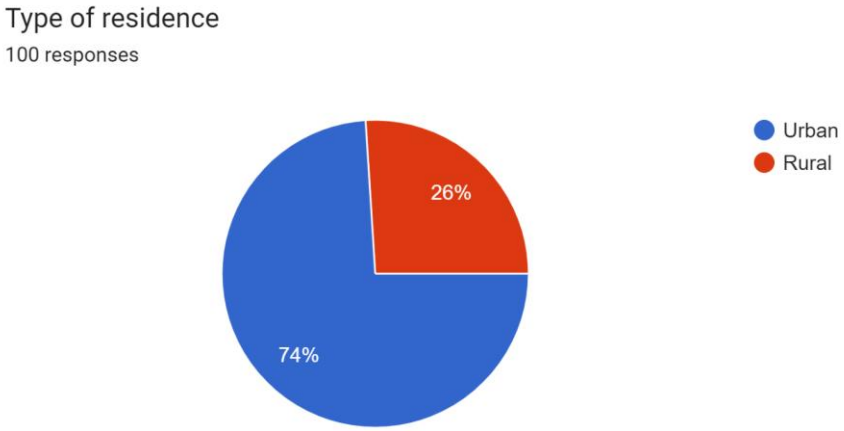

Figure 6

Type of residence

4.1.6 TYPE OF HOUSING

From the following survey , we can identify that the majority of the people live in houses. 76 % live in houses , 20 % of the people live in flats and the rest 4% of the respondents live in shared housing as shown in Figure 7.

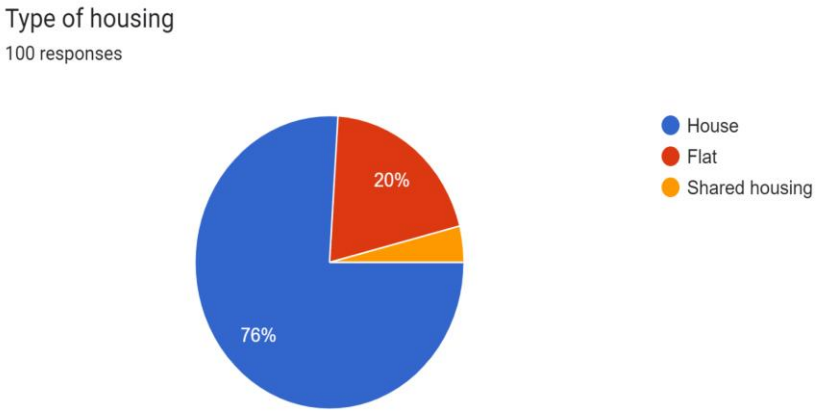

Figure 7

Type of housing

4.1.7 TOTAL AREA OF HOUSE IN SQ.FT

From figure 8 we can identify the total area of houses in sq.ft. 12% live in houses below 800 sq.ft , 35% in houses between 801 to 1400 sq.ft , 25% in chouses between 1400 to 2000 sq.ft and 28% in houses above 2000 sq.ft .

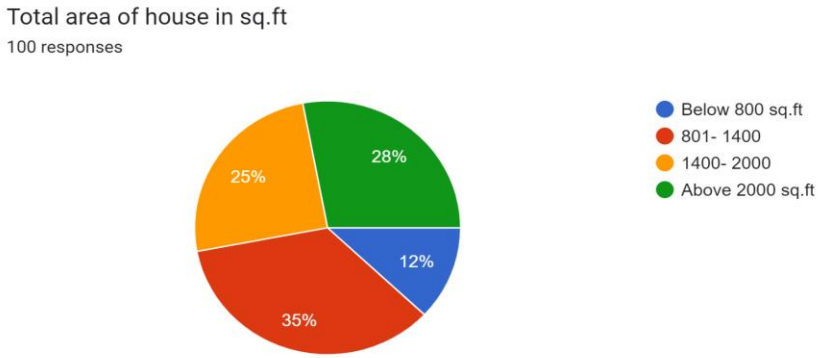

Figure 8

Total area of house in sq.ft

4.1.8 TOTAL AREA OF LAND IN CENTS

The total area of land in cents was recorded. 30% have land area below 5 cents , 42% have area between 5 to 10 cents and 20% have area of land above 10 cents as shown in figure 9.

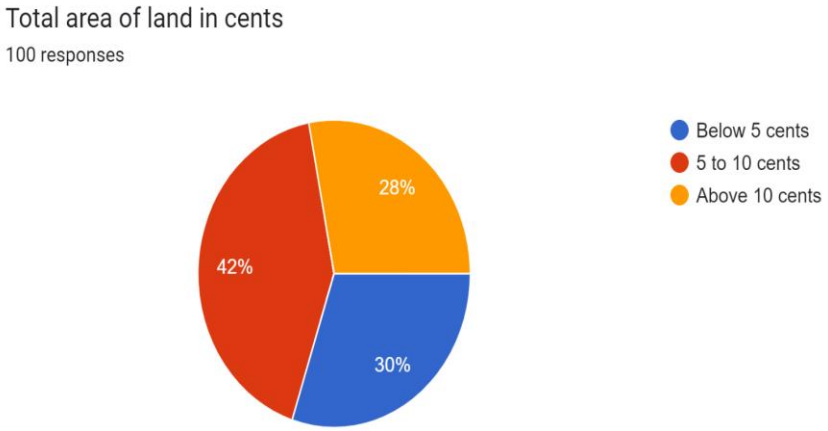

Figure 9

Total area of land in cents

4.2 TYPE OF GARDEN AT HOME

The survey shows the type of garden that the respondents have at home. 32% of the respondents have ornamental gardens , 21% have vegetable gardens and 47% have both vegetable and ornamental gardens at home as shown in Figure 10.

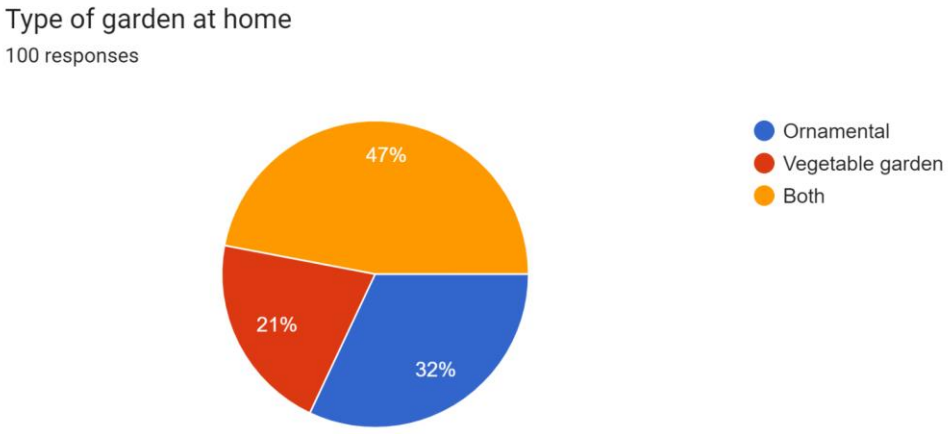

Figure 10

Type of garden at home

4.3 TYPE OF COURTYARD

The type of courtyard of each respondent was collected. 21% of them have concrete courtyard, 35% of them have a completely tiled courtyard, 34% have a partially tiled courtyard. The remaining 10 respondents have free sand , pebbles, without concrete or tiled , soil , grass , partial concrete and sand at 1% each as shown in figure 11.

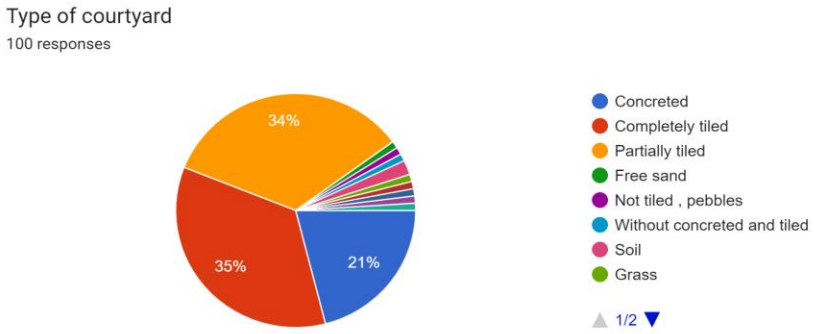

Figure 11

Type of courtyard

4.3 STYLES ADOPTED FOR OUTDOOR GARDENING

The various styles of garden adopted is shown in figure 12. 15% of the respondents have a formal garden and 26% have an informal garden. 17% of them have gardens with flowering plants, 11% with non-flowering plants and 50% with a combination of both. 24% of the respondents have a balcony garden , 10% have an indoor garden , 15% have a terrace garden and only 1% have a few trees and pots with flowers.

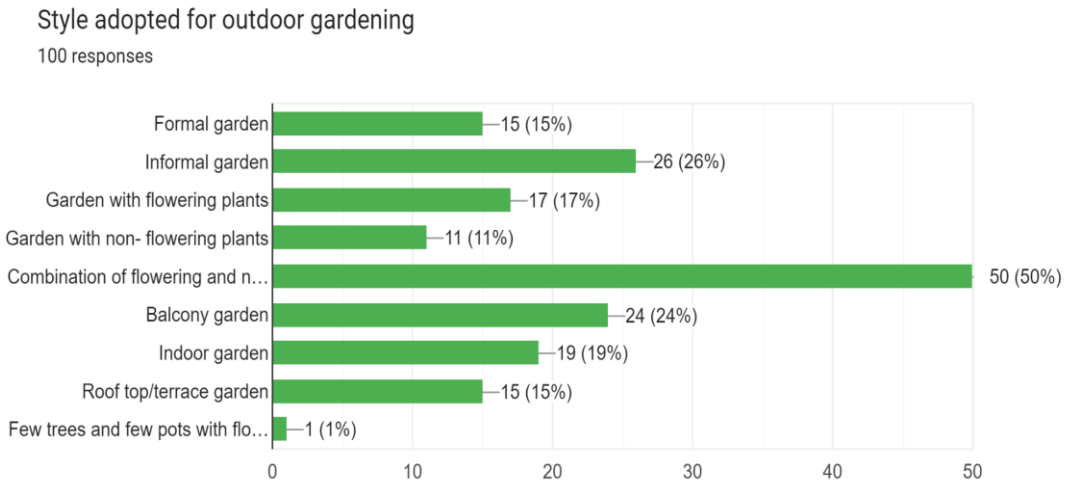

Figure 12

Style adopted for outdoor gardening

4.4 TYPES OF FLOWERING PLANT

Many of the respondents have flower plants in their garden. Majority of them - 61% of them have roses , 38% have orchids, 37% have bougainville , 25% have Anthurium and only 4% have Heliconia. 21% have no flowering plants as shown in Figure 13.

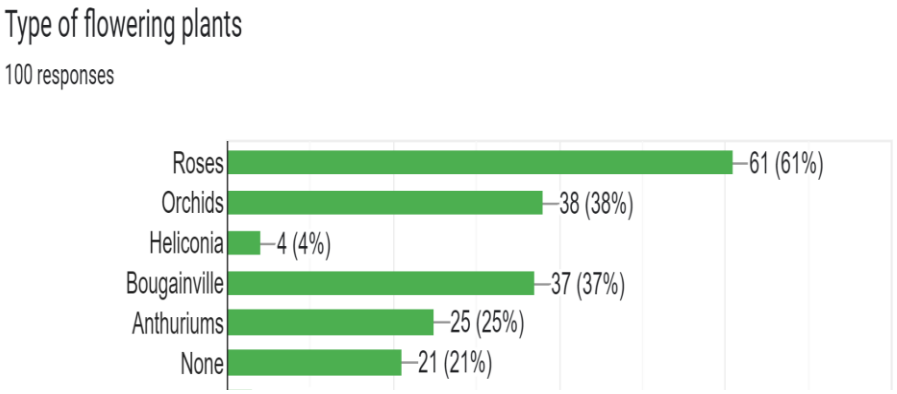

Figure 13

Type of flowering plants

4.5 TYPES OF INDOOR PLANTS

Majority of the respondents those who keep indoor plants have money plant. 76% of the respondents have money plant, 15% have palms , 13% have bamboos , 5% of them have bonsai and 18% have no indoor plants as shown in figure 14.

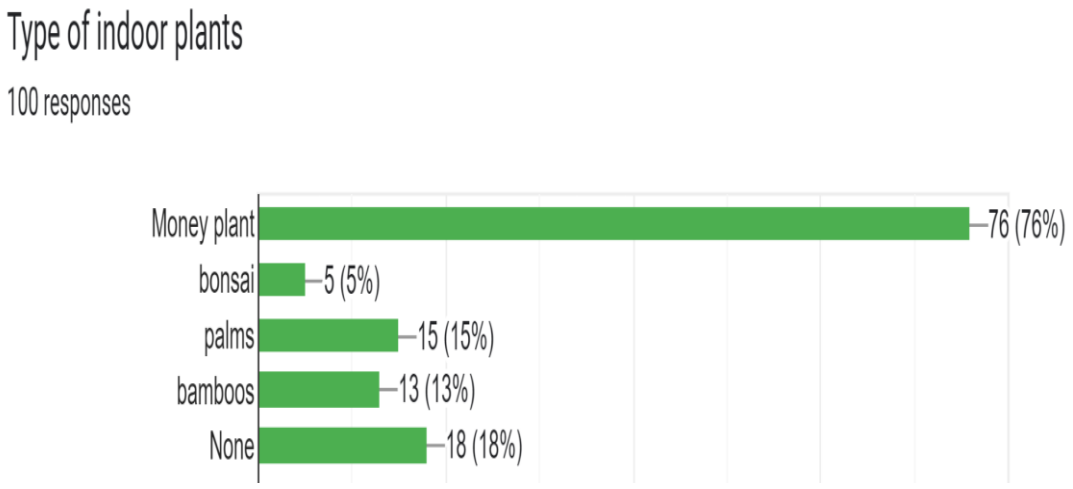

Figure 14

Type of indoor plants

4.6 TYPES OF VEGETABLES CULTIVATED IN THE GARDEN

From figure 15 , We can identify that 45% of the respondents cultivate lady's finger , 24% of them cultivate bitter gourd, 16% cultivate ash gourd, 47% cultivate beans , 47% of them cultivate tomatoes and 20% of the respondents do not cultivate any vegetables.

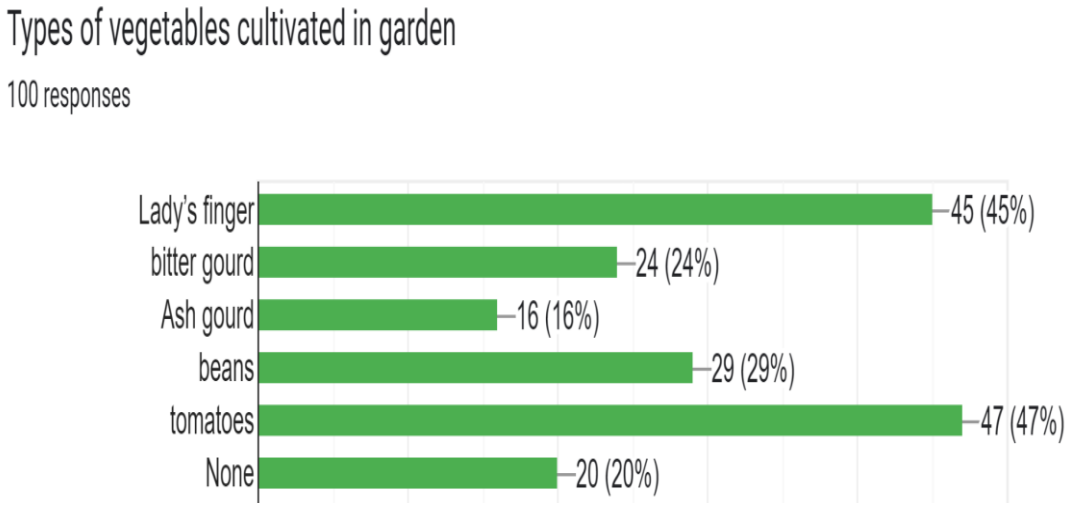

Figure 15

Types of vegetables cultivated in the garden

4.7 GARDEN FEATURES ADOPTED

Garden features makes a garden look more attractive. 33% of the respondents have a water garden , 12% of them have a rock garden , 21% have a lawn ,5% have statues in their garden , 8% have hedges, 5% of them have topiary and 31% of the respondents have no additional garden features as shown in figure 16.

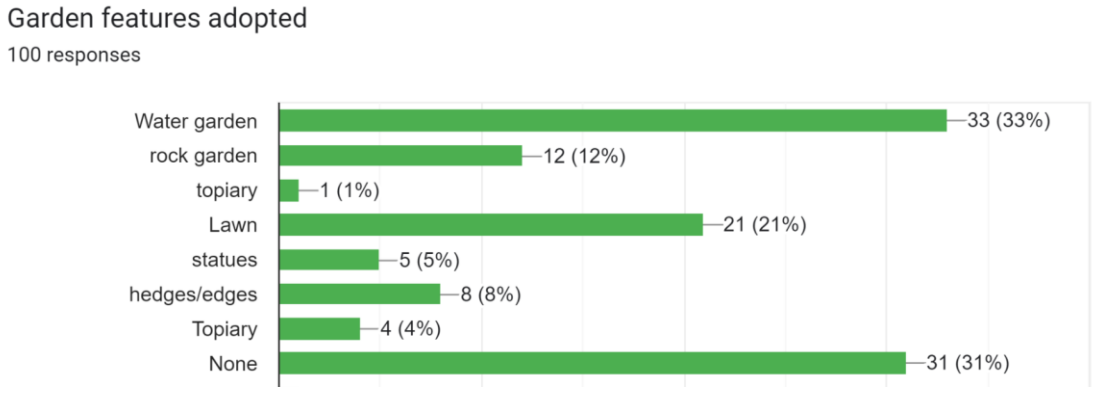

Figure 16

Garden features adopted

4.8 WASTE MANAGEMENT PRACTICES ADOPTED

All of us generate waste in our day to day activities. In figure 17 we can see the waste management practices of the respondents. 36% of them dump the waste in corporation bins ,26% burn the waste , 10% send it for land filling, 49% of them compost their waste, 9% of them does vermi-composting, 3% does pipe composting and 14% of them do neither of those.

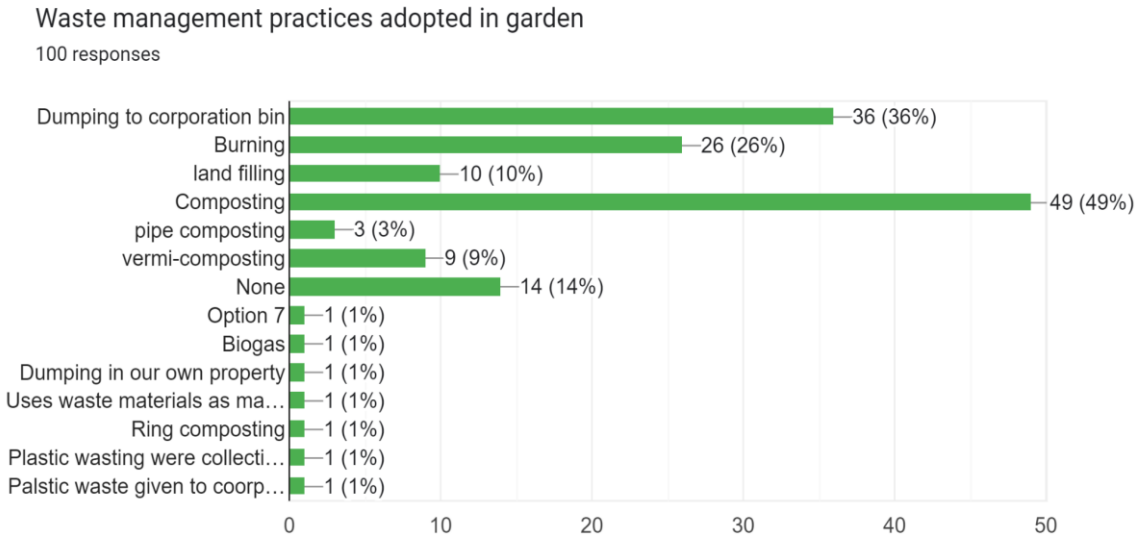

Figure 17

Waste management practices adopted in the garden

4.9 IRRIGATION PRACTICES ADOPTED IN THE GARDEN

Plants need water to grow. Irrigation is the supply of water to the plants to help them grow. According to figure 18 we can identify that various respondents have different types of irrigation practices. Majority of them , 68% use bucket and mug , 48% of the respondents use hose , 9% of them use sprinklers or water fountain, 3% of them use drop irrigation and 1% use wick irrigation and gentle spraying for irrigation.

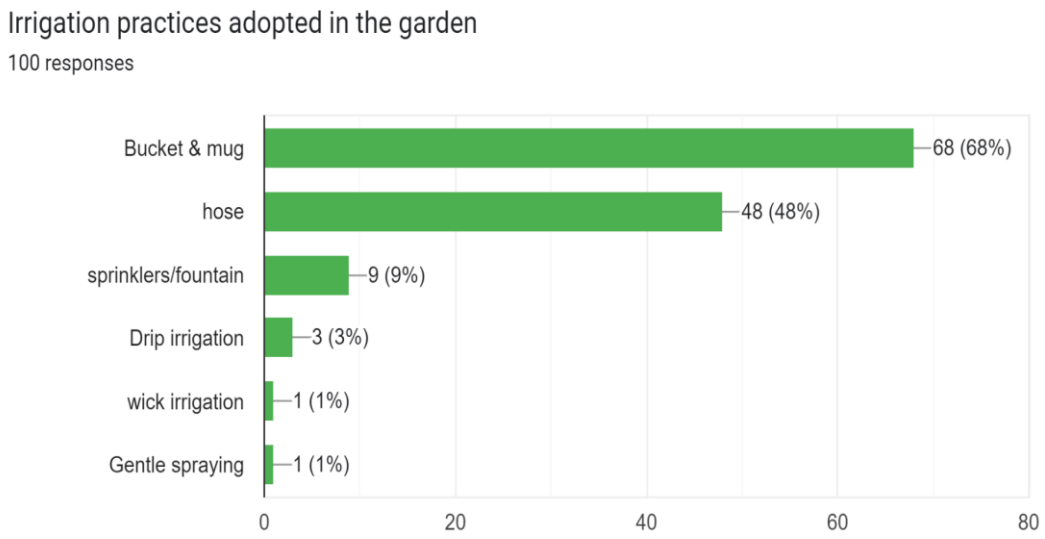

Figure 18

Irrigation practices adopted in the garden

4.10 TYPES OF FERTILIZERS USED

Various types of fertilizer are used to help plants grow. Among the respondents, 71% of them use organic fertilizer, 9% of them use chemical fertilizers, 21% use flowering, 2% of the respondents use hormones and 24% of them don't use any fertilizers at all as shown in figure 19.

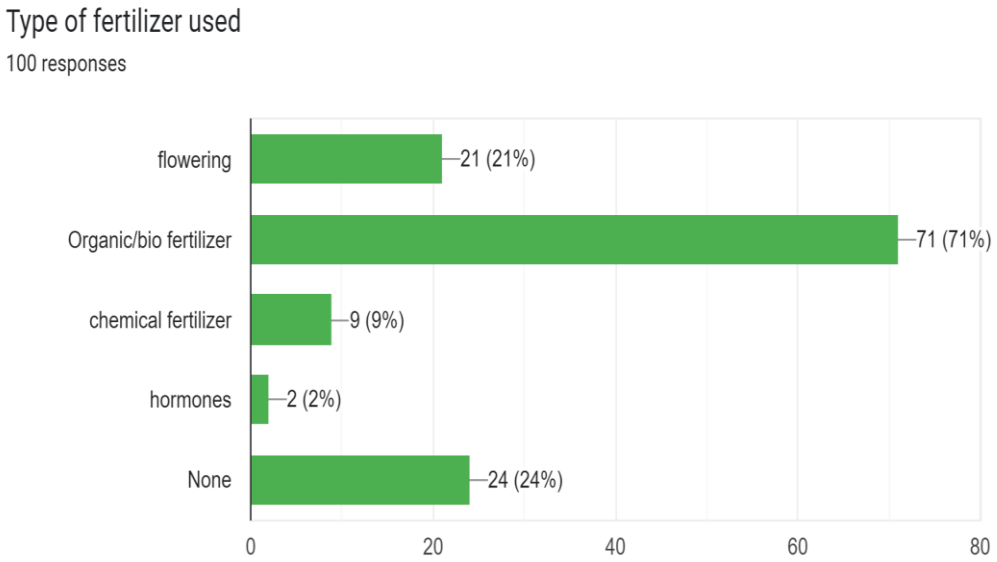

Figure 19

Types of fertilizer used

4.11 TYPES OF PESTICIDES USED

Pesticides are used to keep the plants safe from insects and pests that destroys the plants. We can identify that 49 % of the respondents use organic/bio pesticides, 5% use chemical pesticides, 45% of them don't use any pesticides at all and 1% use both organic and chemical pesticides as shown in figure 20.

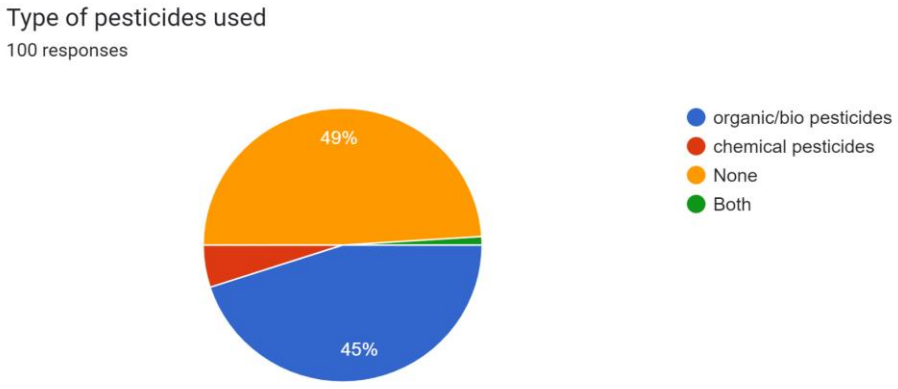

Figure 20

Types of pesticides used

4.12 PERSON DOING GARDENING WORK

According to figure 21, we can identify the person doing gardening work at home. 36% of the mothers and wives do the gardening work at home , 21% of them responded that the father or husband does it, 26% of the children, 16% responded that their grandparents do the gardening work and 11% of the respondent's have paid help to do the garden work.

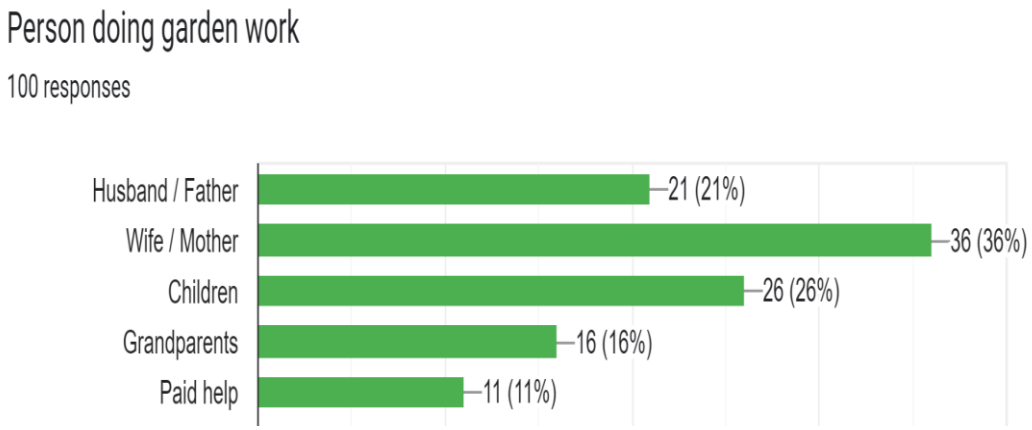

Figure 21

Person doing garden work

4.13 TIME SPEND FOR GARDENING PER DAY

The time spent doing gardening work per day was recorded. Majority of them, 60% of the respondents spend less than one hour gardening per day , 31% spend 1 to 2 hours , 7% spend 2 to 3 hours gardening and only 2% of the respondents spend more than 3 hours gardening as shown in figure 22.

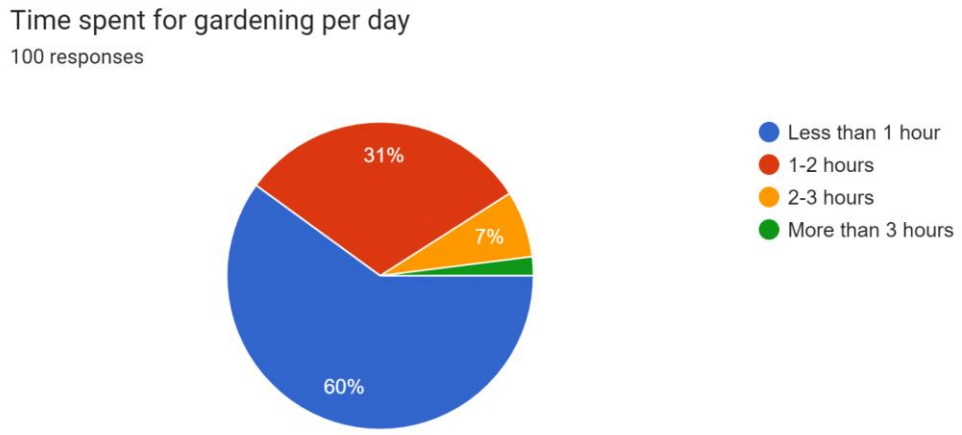

Figure 22

Time spend for gardening per day

4.14 FAMILY MEMBERS INVOLVEMENT IN GARDENING

The involvement of the various members in the family can be identified according to figure 23. Majority of them responded that the husband and father's involvement in gardening is poor, the involvement of the wife and mother is excellent and the involvement of children is satisfactory and grandparents are poor . Only a few respondents, less than 10 respondents felt that the involvement of the father, children and grandparents is excellent.

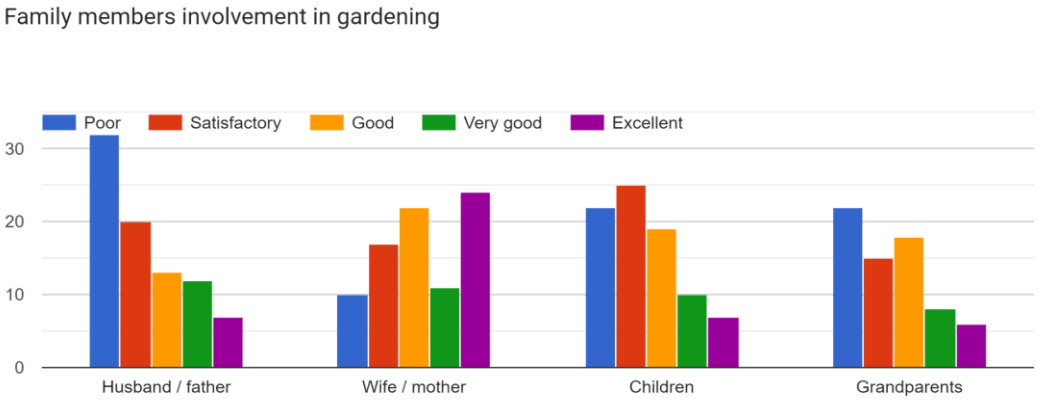

Figure 23

Family members involvement in gardening

4.15 ADVANTAGES OF MAINTAINING A GARDEN

Maintaining a garden has various advantages. According to figure 24, we can identify that 66% of the respondents say that the advantage of maintaining a garden is the satisfaction of aesthetics, 53% responded that it improves the aesthetics of the home, 24% of them responded that it gives pleasant fragrance, 59% responded that it improves oxygen supply, 24% of them said it reduces food budget, 2% maintain a garden as a hobby and 1% grown aloe vera for their hair and skin.

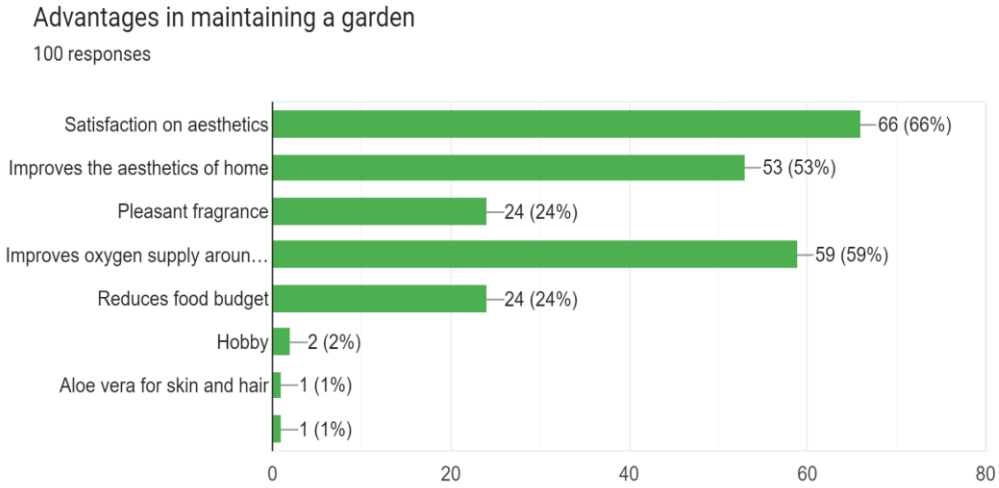

Figure 24

Advantages in maintaining a garden

4.16 LIMITATIONS IN MAINTAINING A GARDEN

There are various limitations when it comes to maintaining a garden. The limitations of maintaining a garden were identified in the study. 48% of them responded that they only have limited time for doing gardening work, 47% of them have limited space for formal layouts and 40% of the respondents lack expertise in potting, budding , grafting etc as shown in figure 25.

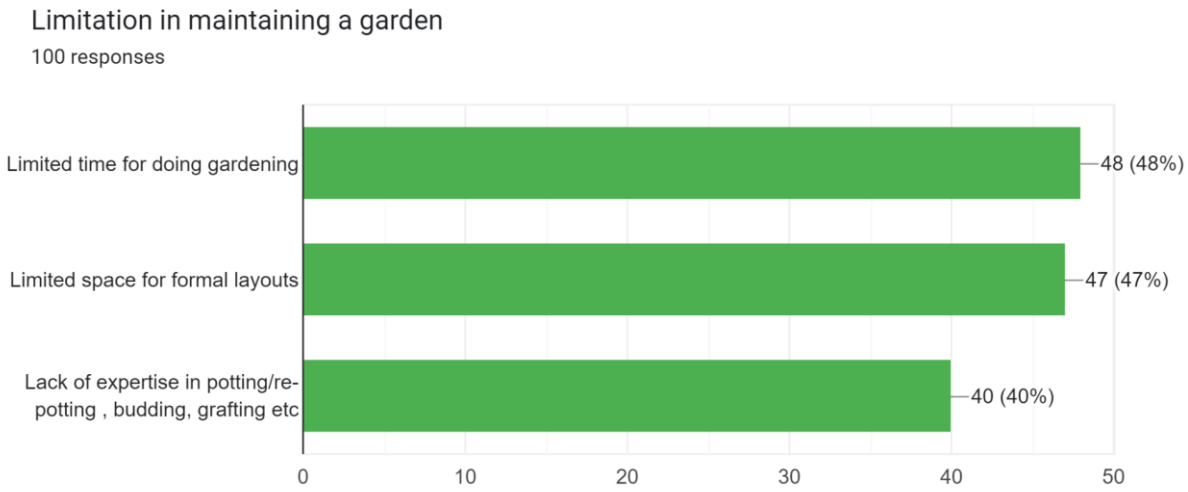

Figure 25

Limitations in maintaining a garden

Chapter 5
SUMMARY & CONCLUSION

Home gardening can be defined as the practice of growing plants, fruits, vegetables, and herbs in and around your own home. It can be done in various spaces, such as a backyard, balcony, or even indoor areas using containers. Home gardening allows individuals to have control over the quality and safety of the food they consume while also providing a rewarding and sustainable way to connect with nature. It involves tasks like planting, watering, fertilizing, and maintaining the plants to ensure their healthy growth. Whether you have a small plot or just a few pots, home gardening is a wonderful way to enjoy fresh produce and create a green oasis right at home.

The study on the topic **"Sustainable gardening practices in urban households"** are summarized below in the following points:

1. The method adopted for the study is the survey method. The online survey was made through Google forms and circulated online.
2. The respondents were from Kerala mainly from Ernakulam district.
3. The study was conducted among 100 individuals
4. The sample consisted of people with different age groups Out of them 80% of them were below 30 years , 6% were between 30 to 40 years of age , 5% was between 41 to 50 years of age and 9% were above 50 years
5. Among the respondents, 32% are below graduation, 47% have completed their graduation and 21% have done post graduation.
6. The s majority,74% of the family have 4 to 6 members while 17% have less that 4 members and only 9% have more than 6 members.
7. The study reveals the monthly income of the family.11% of the family have income below Rs.10,000 , 21% between Rs.10,000 and Rs.30,0000 , 20%

between Rs.30,000 and Rs.60,000 and 48% of the family have income above Rs.60,000

8. The study also reveals that majority of them live in urban areas. 74% of them live in urban areas and 26% live in rural areas.
9. Among the respondents,76 % live in houses , 20 % of the people live in flats and the rest 4% of the respondents live in shared housing.
10. The study reveals the area of the house in sq,ft of the various respondents.12% live in houses below 800 sq.ft , 35% in houses between 801 to 1400 sq.ft , 25% in chouses between 1400 to 2000 sq.ft and 28% in houses above 2000 sq.ft .
11. The total area of land in cents of the respondents was recorded. 30% have land area below 5 cents , 42% have area between 5 to 10 cents and 20% have area of land above 10 cents
12. Among the respondents, 32% of the respondents have ornamental gardens , 21% have vegetable gardens and 47% have both vegetable and ornamental gardens at home .
13. The survey reveals the type of courtyard of the respondents 21% of them have concrete courtyard, 35% of them have a completely tiled courtyard, 34% have a partially tiled courtyard. The remaining 10 respondents have free sand , pebbles, without concrete or tiled , soil , grass , partial concrete and sand at 1% each .
14. From the study, 15% of the respondents have a formal garden and 26% have an informal garden. 17% of them have gardens with flowering plants, 11% with non-flowering plants and 50% with a combination of both. 24% of the respondents have a balcony garden , 10% have an indoor garden , 15% have a terrace garden and only 1% have a few trees and pots with flowers.
15. Majority of them of them have roses , 38% have orchids, 37% have bougainville , 25% have Anthurium and only 4% have Heliconia. 21% have no flowering plants

16. Majority of the respondents have money plant. 76% of the respondents have money plant, 15% have palms , 13% have bamboos , 5% of them have bonsai and 18% have no indoor plants
17. The study reveals that 45% of the respondents cultivate lady's finger , 24% of them cultivate bitter gourd, 16% cultivate ash gourd, 47% cultivate beans , 47% of them cultivate tomatoes and 20% of them do not cultivate any vegetables.
18. From the survey we can identify that 33% of the respondents have a water garden , 12% of them have a rock garden , 21% have a lawn ,5% have statues in their garden , 8% have hedges, 5% of them have topiary and 31% of the respondents have no additional garden features
19. The reveals that 36% of them dump the waste in corporation bins ,26% burn the waste , 10% send it for land filling, 49% of them compost their waste, 9% of them does vermi-composting, 3% does pipe composting and 14% of them do neither of those.
20. Majority of them , 68% use bucket and mug , 48% of the respondents use hose , 9% of them use sprinklers or water fountain, 3% of them use drop irrigation and 1% use wick irrigation and gentle spraying for irrigation.
21. The study reveals that 71% of the respondents use organic fertilizer, 9% of them use chemical fertilizers, 21% use flowering, 2% of them use hormones and 24% of them don't use any fertilizers at all
22. Among the respondents,49 % of the respondents use organic/bio pesticides, 5% use chemical pesticides, 45% of them don't use any pesticides at all and 1% use both organic and chemical pesticides
23. Majority of the mothers and wives do the gardening work at home , 21% of them responded that the father or husband does it, 26% of the children, 16% responded that their grandparents do the gardening work and 11% of the respondent's have paid help to do the garden work.

24. The study reveals that 60% of the respondents spend less than one hour gardening per day , 31% spend 1 to 2 hours , 7% spend 2 to 3 hours gardening and 2% of the respondents spend more than 3 hours gardening
25. The majority of the respondents say that the advantage of maintaining a garden is the satisfaction of aesthetics, 53% responded that it improves the aesthetics of the home, 24% of them responded that it gives pleasant fragrance, 59% responded that it improves oxygen supply, 24% of them said it reduces food budget, 2% maintain a garden as a hobby and 1% grown aloe vera for their hair and skin.
26. The study reveals that 48% of them responded that time for doing gardening is a major limitation, 47% of them have limited space for formal layouts and 40% of the respondents lack expertise in potting, budding , grafting etc

CONCLUSION

From the above summarized points , the study came to a conclusion that people have different gardening styles.Majority of the respondents live in urban areas. The size of their homes and land and also the type of housing differs among the respondents. The majority live in individual houses. Different types of garden layouts and plants are grown in the gardens and many also have indoor plants like money plant. Some of them use fertilizers and pesticides while others do not use any. The waste management system of each household was also noted. Majority prefer to do irrigation using the traditional bucket and mug method. There are various advantages and significance of maintaining a garden at home and various respondents do it for different reasons and on the other hand there are limitations such as lack of space, time etc. Thus we were able to collect and study the sustainable gardening practices in urban households.

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